Working Memo # 547

DATE: October 2, 1987

TO: Division Directors

THROUGH: Allen R. Hammer, P.E., Director
Bureau of Water Supply Engineering

Eric H. Bartsch, P.E., Director
Division of Water Programs

FROM: Robert B. Taylor, P.E., Technical Services Chief
Bureau of Water Supply Engineering

SUBJECT: Water - Design - Distribution System - Precast concrete water reservoirs

We have been seeing projects that have included precast concrete water reservoirs. The following general guidelines should be followed when reviewing such projects.

1. Section 11:00 of the Waterworks Regulations should be followed whenever applicable.

2. Location - Due to the relatively small size of these reservoirs the bottom of the tank may be located below natural grade to facilitate frost protection. See Section 11.01b. of the Waterworks Regulations. The bottom of the tank must be above the water table (preferably at least 12 inches above the seasonal watertable).

   See Section 11.01c. - The top of such reservoir shall be two feet or more above the normal ground surface.

   Many of these reservoirs are fabricated in two or more sections; such reservoirs must be factory assembled with the seam positively sealed. Such seams may be located below the surface grade line.

3. Bedding - The foundation for all such reservoirs must be properly bedded with at least 6 inches of sand or pea gravel to assure a level and stable installation.

4. Inlets and Outlets - All water inlets and outlets to such reservoirs should be cast in place if possible. If knockouts are used, the following precautions must be taken:

   a. Plastic pipe shall be avoided.

   b. A gasket type flexible water stop shall be provided.

   c. Non-shrink grout must be used to seal the spaces between the pipe and the reservoir.

5. In lieu of motor oil, food grade mineral or vegetable oil MUST be used in any forms used in casting reservoirs intended for potable water storage.

6. The entire interior of the reservoir must be sealed with an approved coating.

7. All such reservoirs must be fitted with approved type hatches, overflows and drains.

8. Interior ladders may be omitted from reservoirs 10 feet deep or less in order to discourage easy access.

9. All such precast reservoirs must be cast of 5000 pound Type II Portland Cement or equivalent.

10. All such reservoirs must be disinfected in accordance with the regulations prior to being placed in service.

If any questions arise, please contact the Central Office for assistance. Copies of typical reservoir designs and details are attached.

Attachments
RBT/teh

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(DRAWINGS)

Notes:
*Inserts or blockouts as required
*5,000 psi concrete

Uses:
*Holding tank
*5,000 gallon septic tank

Notes:
*Inserts or blackouts as required
*5,000 psi concrete

Uses:
*Utility Vault
*Storage tank

(DRAWINGS)

Notes:
*Inserts or blockouts as required
*5,000 psi concrete

Uses:
*Pump station wetwell
*Valve vault
*Manhole

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Notes:
*Inserts or blockouts as required
*5,000 psi concrete
*Reinforced per ASTM 478-80

Uses:
*Pump station wetwell
*Junction manhole

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(DRAWINGS)

Notes:
*Inserts or blockouts as required
*5,000 psi concrete
*Reinforced for traffic bearing

Uses:
*Utility Vault
*Meter Vault
*Holding tank

Notes
*Inserts or blockouts as required
*5,000 psi concrete
*Reinforced for traffic bearing

Uses:
*Utility Vault
*5,000 gallon holding tank

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How to Specify

RAM-NEK

RAM NEK® complies in every detail with the new Federal Specification SS-S-210-A (GSA-FSS) July 2, 1975 which follows: (1) SS-S-210-A(1.1 scope) covers a cold applied preformed sealing compound for sealing expansion joints and tongue & groove joint, concrete pipe culverts, storm drains and sewer pipe.
(2) SS-S-210-A (3.4 ADHESION & HYDROSTATIC PRESSURE). The sealing compound shall not leak at the joints (while being tested at 10 psi) for a period of 24 hours.
(3.5 SAG or FLOW RESISTANCE - vertical and over head 1" wide joints) no sagging shall be detected (while being tested at 135°F) for a period of 5 days.
(3.6 CHEMICAL RESISTANCE) no visible deterioration of the sealing compound (when immersed separately in solution of acid, alkalies and saturated hydrogen sulfide) for a period of 30 days.

RAM-NEK® STANDARD APPLICATIONS:

o Concrete Pipe all sizes and shapes (gravity flow)

o Precast Concrete Box Culverts

o Manholes

o Utility Vaults

o Steel Cylinder Concrete Pressure Pipe (joint space filler for protecting the steel end rings).

o Concrete Canals & Reservoirs

o Corrugated Metal Pipe

RAM - NEK
Gasket Division

- TOLL FREE - 1-800-231-4549

K. T. Snyder Co., Inc.
Sales Offices
2100 Travis Street-
Houston, TX 77002
(713)650-6174 Cable SNYCO

(DRAWINGS)
1) MANHOLES & VAULTS - Tongue and Grove or V-Type Confined Groove.

(DRAWINGS)
2) EXTERIOR/INTERIOR SPACE FILLER - easily accomplished simultaneously with pipe laying.

(LARGE DRAWING)

(DRAWINGS)
3) PLAIN BELL & SPIGOT

(DRAWINGS)
4) METAL SECTIONAL PIPE - Sealing laps on multi plate structures.

JOINT DETAIL

(DRAWINGS)
5) CRACKS & EXPANSION JOINTS - concrete Canals and reservoirs.

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(This last page will be typed onto two pages because of the layout of the page)
Page one

(DRAWING)

THIS PRODUCT IS DESIGNED TO ELIMINATE LEAKS AROUND PIPE ENTERING MANHOLE WALLS WHILE ALLOWING FOR PIPE MOVEMENT. It IS ESPECIALLY USEFUL FOR PIPES TO WHICH CONCRETE WILL NOT ADHERE, SUCH AS PLASTIC.

THE "CMA" ADAPTER IS MADE OF FLEXIBLE PVC AND IS AVAILABLE FOR 4, 5, 6, 8, 10, AND 12 INCH PIPE.
ONE SIZE FITS A NOMINAL PIPE SIZE REGARDLESS OF PIPE MATERIAL.

STRETCH "CMA" OVER CLEAN END OF ENTRANCE PIPE, BEING CERTAIN ITS SEALING LIPS ARE TOWARD THE OUTSIDE.

POSITION "CMA" ON ABOUT CENTER OF MANHOLE WALL.

GROUT AROUND "CMA" AND PIPE AS NORMALLY DONE TO CLOSE AN OPENING IN A CONCRETE WALL.

CMA ADAPTER

FERNCO 300 S. DAYTON, DAVISON, MICHIGAN 48423
JOINT SEALER CO (313)653-9626

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(Continuation of Page one above)

HOW TO SPECIFY

RAM-NEK Preformed Plastic Gasket meets or exceeds all requirements of Federal Specifications SS-S-00210, "Sealing Compound, Preformed Plastic for Pipe Joints", Type I, Rope Form. Such plastic gasket shall be equal to RAM-NEK as manufactured by K. T. Snyder Company, Inc. of Houston, Texas, and shall meet the following requirements:
(2) SS-S-00210 (3.4 ADHESION & HYDROSTATIC PRESSURE). The sealing compound shall not leak at the joints (while being tested at 10 psi) for a period of 24 hours.
(3.5 SAG OR FLOW RESISTANCE -- vertical and overhead 1" wide joints) no sagging shall be detected (while being tested at 135°F) for a period of 5 days.
(3.6 CHEMICAL RESISTANCE) no visible deterioration of the sealing compound (when immersed separately in solution of acid, alkalies- and saturated hydrogen sulfide) for a period of 30 days
4.) The Sealing compound shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler, and shall contain no solvents, irritating fumes or obnoxious odors. The compound shall not depend on oxidizing, evaporating, or chemical action for its adhesive or cohesive strength. It shall be supplied in extruded rope-form of suitable cross-section and of such sizes as to seal the joint space when the pipes are laid. The sealing compound shall be protected by a suitable removable two-piece wrapper. The two-piece wrapper shall be so designed that one-half may be removed longitudinally without disturbing the other half to facilitate application of the sealing compound. The flexible plastic gasket shall also meet the requirements as stated in the following table:

COMPOSITION	TEST METHOD	MIN	MAX
Bitumen(petroleum plastic content	ASTM D 4	50	70
Ash-Inert Mineral Matter	AASHOT 111	30	50
Volatile Matter	ASTM D 6	--	2.0

PROPERTY	TEST METHOD	MIN	MAX
Specify Gravity @ 77°F	ASTM D 71	1.20	1.30
*Ductility @ 77°F (cm)	ASTM D 113	5.0	--
*Softening Point	ASTM D 36	320°F	--
*Penetration 77°F(150 gms) 5 sec.	ASTM D 217	50	120

*Due to the nature of the material, each sample to be tested must be manually kneaded, in lieu of heating and pouring, into various molds suggested by ASTM Standards to reduce the void content and improve testing accuracy and reproductivity.